Contents lists available at ScienceDirect

American Journal of Infection Control

journal homepage: www.ajicjournal.org

Commentary

The role of the infection preventionist in a transformed healthcare system: Meeting healthcare needs in the 21st century

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CONFERENCE RECOMMENDATIONS

Infection preventionists (IPs) serve on the front lines of healthcare every day, working to eliminate healthcare−associated infections (HAIs) and improve patient safety and the quality of care. Over the last decade, they have helped to save tens of thousands of lives, reduce harm to millions of patients, and save billions in healthcare costs.[1] Like other healthcare professionals in the United States today, IPs are being called on to further demonstrate their value to a healthcare system undergoing profound change.

In recent years, the US healthcare system has been shifting its focus away from acute care delivered to sick patients in hospitals by autonomous practitioners toward population health management by accountable healthcare teams working in community-based settings. Myriad forces are driving this shift, including the well-known fact that, as the US continues to spend more on healthcare than any other country, Americans are growing sicker, frailer, and experiencing a heavier burden of chronic disease. Rapid technological advances, affecting how practitioners deliver care and patients access care, also are driving the shift toward value.

The pressure to contribute value to the healthcare system is not new to the field of infection prevention and control (IPC), which has evolved to address system needs. Four decades ago, specially trained nurses served as hospital-based data trackers who monitored and reported on infection rates. Today, those same specialized nurses would be called IPs, and their role has expanded from surveillance to active prevention of HAIs. In addition, IPs now come from fields besides nursing, including laboratory sciences and public health, and they are beginning to work in many different settings that span the continuum of care.

As they lead the fight against HAIs, IPs must also look toward a transformed future healthcare system and identify the role they will play and the ways they continue to contribute value. The transformed system will be focused on high-value care—defined as care that improves patient safety, satisfaction, and outcomes; reduces costs; and is delivered where the patients are, including in long-term care facilities, physicians' offices, retail-based and other types of walk-in clinics, patients' homes, and even online or over the telephone—and it holds both tremendous opportunities and challenges for IPs.

To help IPs explore these opportunities and challenges and decide where their future value will lie, the Association for Professionals in Infection Control and Epidemiology (APIC) convened a conference, *The Role of the Infection Preventionist in a Transformed Healthcare System: Meeting Healthcare Needs in the 21st Century*. The conference brought together leaders and experts from both the IP profession and the broader IPC field to imagine the future role of IPs and develop consensus recommendations that the profession can implement.

"The APIC Board of Directors has a fiduciary responsibility to guide the organization and support our members, but we're not necessarily the right ones to gauge the future of the profession—certainly not the only ones," said APIC 2018 Board President Janet Haas, PhD, RN, CIC, FSHEA, FAPIC, Director of Epidemiology at New York's Lenox Hill Hospital, in her welcoming remarks at the conference. "We're looking to you—our expert conferees with your diversity of perspectives—to reimagine the IP role and advise us on future directions for IPs. APIC is committed to this process and to acting on the recommendations."

The conference recommendations are presented below following details on conference design, a summary of the context-setting plenary sessions that opened the conference, and an overview of the process used to develop the consensus recommendations.

CONFERENCE DESIGN: APIC CONVENES IPs AND OTHERS WITH THE FUTURE IN MIND

APIC's Board of Directors approved the consensus conference in January 2018, and soon after appointed a conference steering committee

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Conflict of interest: None to report.

to work with Chief Executive Officer Katrina Crist to design the conference. Crist had brought the idea for the conference to the Board based on her own review of successful models for consensus conferences, including those developed by the National Institutes of Health and the Josiah Macy Jr Foundation. APIC conference steering committee members, listed in the next section, were chosen because they came to the IP profession via different educational and experiential paths, helping to ensure a variety of perspectives would be brought to the conference planning process.

- Mary Lou Manning, PhD, CRNP, CIC, FAPIC, FAAN (conference chair)
  Professor of Nursing, Thomas Jefferson University College of Nursing (PA)
- Denise Murphy, RN, BSN, MPH, CIC, FAPIC, CPPS, FAAN
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Informational materials developed for the conference describe it as bringing together "leaders from within infection prevention and control and across the healthcare spectrum" to jointly "identify future possibilities and produce recommendations that advance the value of the IP in a transformed healthcare system." Invited conferees were told that they would be "anticipating trends and developing actionable strategies and recommendations that position IPs for future success."

APIC Board members charged the steering committee with inviting a broad representation of leaders and experts to the conference. The Board wanted to include not only a diverse group of IPs, but also professionals from outside the field whose work connects to the IPC field. "Through the conference, we wanted to view the future role of IPs with a different lens," said Crist. "Not with our APIC lens, but with the lens of practicing IPs and their colleagues in healthcare; the people who are working every day to ensure patient safety and quality of care. It is their perspectives on the future that matter most to the continued success of the profession."

The conference was attended by 36 invitees (see list of participants), about half of whom were IPs with a range of backgrounds and professional experiences. The other half of conferees included health system executives, government regulators, and practitioners from a variety of disciplines and care settings. The APIC Board of Directors attended as observers.

CONFERENCE CONTEXT: TRENDS IN HEALTHCARE AND OPPORTUNITIES FOR IPs

Consensus building among members of a group—such as participants at a conference focused on developing recommendations—begins with shared context. Group members should enter the process with some common understanding among them about the issues at hand. To this end, APIC asked invited conferees to review, prior to the conference, a set of background materials that provided baseline information on the IP profession and on the future of the healthcare system.[2-6] A preconference survey also was conducted to start conferees thinking about and organizing their thoughts in relation to the types of questions that would be used to spur discussion at the conference. The survey also helped conference steering committee members gauge where conferees would be starting from in their efforts to reimagine the IP role. In addition to these preparatory uses, the survey responses also may be helpful

to APIC following the conference, when exploring ways to implement the recommendations.

Keynote overview

The steering committee's context-setting efforts continued through the start of the conference, specifically during 2 plenary sessions. The first of these 2 plenaries was a keynote address by Steven Miller, MD, MBA, Senior Vice President and Chief Medical Officer of Express Scripts on *The Evolving Healthcare Landscape and Opportunities to Lead.*

Dr. Miller told the audience that the transformation happening in healthcare is creating opportunities for IPs. He described opportunities in traditional acute care settings, stating: "IPs can help hospitals manage risk" because "infections are not an acceptable outcome to payers, they don't pay for infections." Also, hospital patients today are frailer and sicker than ever before, making them more susceptible to HAIs, which cost hospitals an estimated $28-$45 billion each year.[7] He also described opportunities outside of acute care, suggesting that IPs can educate community-based providers, such as dentists and pediatricians, as well as their patients about the growing problems associated with the over-prescribing of antibiotics. Antibiotic overuse and resistance in the US has caused $20 billion in excess direct healthcare cost, plus $35 billion in lost productivity each year.[8] Miller also urged IPs to anticipate the ways that technology will likely change the IPC field in the coming years, including via telehealth, electronic medical records, and smart phone applications.

Discussion of key themes

Dr. Miller's keynote was followed by a second context-setting plenary session that featured a discussion of the 4 key organizing themes of the conference. The 4 themes included: 1) reimagining the IP role; 2) preparing IPs for enhanced leadership roles across the continuum of care; 3) developing strategies to support IP practice across the continuum of care; and 4) building the business case for an enhanced IP role. Before conferees broke into workgroups to develop recommendations around these 4 themes, conference organizers wanted them to remain together and discuss each of the themes as a full group. This provided conferees the opportunity to ask questions and offer insights across all 4 themes before focusing on just 1 in their assigned workgroups. Each steering committee member assumed responsibility for 1 theme, leading both the plenary discussion and the subsequent workgroup development of consensus recommendations on that topic.

Theme 1: Reimagining the IP role: the future of infection prevention in a transformed healthcare system. Dr. Manning opened the discussion by providing conferees with the following context: The healthcare system is undergoing a rapid transformation that places new emphasis on population health, quality of care, interprofessional collaboration, and the value of services delivered. These changes present both opportunities and challenges to IPC programs and to IPs as they assume expanded roles and new responsibilities. This workgroup will explore opportunities for the future role of the IP within and outside of traditional models of care by evaluating the anticipated needs of IPC programs and IPs. Conferees will make specific recommendations for how the IP role can be reimagined to provide more broad-based, value-driven contributions to the healthcare system.

Theme 2: Preparing IPs for enhanced leadership roles across the continuum of care. Denise Murphy led this discussion and provided the following context: Challenges within the healthcare system will require IPs to be collaborative leaders who can engage people and groups to work toward common goals that eclipse their traditional roles, disciplines, and past experiences. The workgroup will formulate recommendations for how IPs can leverage their education and

preparation and serve as courageous and innovative leaders focused on positioning the capabilities of IPs across the continuum of care.

Theme 3: Developing strategies that support IP practice across the continuum of care. The discussion of this theme was led by Beth Wallace, who provided conferees with this description: In evolving and emerging practice environments, IPs have unique and lifesaving knowledge and skills that ensure patient safety as well as bring value to patients, healthcare professionals, and organizations. The workgroup will discuss strategies and formulate recommendations that can advance the role of IPs across the continuum of care, including the home, community-based settings, and telehealth. The group will also focus on strategies within traditional acute care settings as technology and therapies become more complex.

Theme 4: Building the business case for an enhanced IP role. Moderator Marc Wright began the discussion with this context: As the role of the IP expands, there is a need to clearly define the opportunities for revenue generation regarding IPC. The workgroup will discuss the value proposition for the role of the future IP and make recommendations for how these expanded roles can generate revenue for health systems and individual IPs within community-based practice. Subject matter expertise has a return on investment and IPs can create financial value by designing and developing innovative solutions for emerging issues in IPC.

CONSENSUS BUILDING: DEVELOPMENT AND REFINEMENT OF RECOMMENDATIONS ON FUTURE ROLE OF IPs

After a brief presentation by Dr. Manning, conference chair, who was charged with helping conferees open their imaginations and think creatively about the future role of IPs, conferees broke into smaller workgroups. The workgroups were organized around the 4 conference themes, and conferees were assigned to their workgroups with the aim of creating diverse groups representative of the full group of conferees.

Workgroup exercises

The workgroups, each of which was co-led by 1 steering committee member and 1 professional facilitator, began with exercises[9] designed to stimulate creative thinking around complex topics. During the first exercise, called "brainwriting," conferees rapidly generated many ideas related to their group's theme. This exercise is designed to engage all group members equally and provide them with opportunities to build on the ideas of others. Workgroup members then built an "affinity diagram" by identifying and organizing the many ideas into natural groupings. Each of the groupings were given names or headers that captured the key organizing principles or strategies that prompted the conferees to group them together. For example, the ideas that involved IP leadership development were grouped together and given a header that invoked the various leadership-related ideas.

Finally, each workgroup created an "interrelationship digraph" to determine the relationships between the various strategies that emerged from the affinity diagram exercise. The digraph exercise helped participants identify which strategies were the drivers, or those that jumpstart progress in multiple areas, and which are targets, or the intended outcomes of other activities. Identifying drivers is particularly beneficial because they provide a frame of reference for the development of recommendations. The most useful recommendations identify priority actions that must be among the first things to be accomplished because they will "drive" subsequent activities and outcomes.

After moving through these exercises in their workgroups, conferees reconvened at the end of the day for a plenary review of the drivers and targets identified by each workgroup. A sampling of the drivers and targets identified within the 4 workgroups are listed in the next sections.

Drivers

Elevate the profession by defining and expanding the IP role (workgroup/theme 1)

Leverage technology to increase efficiency and enhance patient care (workgroup/theme 1)

Implement standard IP education that facilitates development of basic IP skills, using a variety of methodologies, across healthcare settings (workgroup/theme 2)

Develop and implement programs to engage IPs in enhancing their leadership skills (eg, change management, conflict resolution, communication) (workgroup/theme 2)

Advocate for the role and authority of IPs in nontraditional settings (workgroup/theme 3)

Identify and develop key partnerships to promote identification and consistent application of IPC standards that are specific to different care settings (workgroup/theme 3)

Engage, empower, and inform the public, compelling them to advocate for IPC resources (workgroup/theme 4)

Build and develop a multidisciplinary infection control team to maximize organizational effectiveness (workgroup/theme 4)

Targets

Define, develop, and implement a business case that expands the role of IPs in a consumer-driven healthcare model (workgroup/theme 1)

Build a work culture (environment) that supports and facilitates empowerment, risk-taking, engagement, resilience, transparency, and respect (workgroup/theme 2)

Promote and train for the use of technology to enhance efficiency, expand IP reach to multiple settings, and improve accuracy (workgroup/theme 3)

Develop a portfolio of products and services to sell externally (workgroup/theme 4)

Draft recommendations

The workgroups spent the majority of the second day of the conference responding to thematic prompts designed to elicit thoughts and ideas and developing draft recommendations within their thematic focus areas. With a fresh and focused understanding of the differences between drivers and targets, conferees worked in their small groups to develop practical, actionable recommendations that they intentionally framed as drivers (and not as targets). To clarify, they did this because drivers are the steps that must happen first to reach a target, so recommendations framed as drivers are more realistic and action-focused, whereas targets are the outcomes that may result from recommended steps.

At the end of the second day, the workgroups reconvened in a plenary session to present their draft recommendations to the full group of conference participants. A total of 39 recommendations were developed across the 4 groups. Each of the 4 workgroups presented their subset of recommendations and a discussion followed each of the presentations. A broader discussion of the full set of 39 recommendations took place once the workgroup presentations and discussions had concluded.

The discussions during this recommendations review session were focused around clarifying the intent, scope, and/or wording of the various recommendations and, in some cases, determining whether one or more proposed recommendation repeated or otherwise conflicted with another one. The plenary session also was used to identify the intended audience for each recommendation, which, in most cases, turned out to be APIC. In a few cases, the conferees were unable to name the best audience; thus, the few recommendations that lack an identified target audience are directed at the IPC field in general.

After the recommendations review session, the conference concluded for the night. At that time, the conference steering committee members, APIC CEO, and support staff convened to combine the 4

sets of recommendations into 1 complete set. Their work focused on ensuring that the recommendations work together as a whole unit. They combined a handful of recommendations that were considered redundant; added the target audience language to each draft recommendation (where feasible); and generally, "wordsmithed" them all, adding the clarifying details that came up during the plenary discussion and ensuring they were aligned in tone, format, and language.

The next day, a total of 30 recommendations were presented 1-by-1 to the full group of conferees, who were then asked to vote on each 1. Of the 30 total, 28 recommendations were passed by a majority vote of at least two-thirds of the total eligible voters present (meaning at least 22 of the 33 voters present). For the most part, the recommendations were accepted by much wider margins than two-thirds of voters present. The 2 recommendations that were rejected suggested that APIC should serve as a clearinghouse or resource center on innovative technologies and that APIC should evaluate the innovative technologies that IPs might use in their work.

The final consensus recommendations, in no particular order, appear in the following sections.

Recommended Actions:
APIC, on behalf of the profession, should:

1) Establish standard minimum academic credentials for IPs.

2) Advocate for the development of a bachelor's degree in infection prevention.

3) Develop a process for differentiated practice, defining requirements for technical versus clinical leaders.

4) Promote the development of organizational culture in which IPC practices are systematically incorporated in all aspects of society and commerce.

5) Integrate IP leadership training with technical training.

6) Define leadership competencies required for IPs, including the continuous improvement of organizational culture, and advocate for their widespread adoption.

7) Create a mechanism to engage healthcare executives (eg, American College of Healthcare Executives, American Organization of Nurse Executives, Infectious Diseases Society of America, Society for Healthcare Epidemiology of America) that results in the mutually beneficial positioning of IPs as organizational leaders.

8) Advocate for the creation of promotional pathways (eg, IP clinical specialist) that facilitate career advancement.

9) Develop and implement IPC training for other healthcare professionals and those functioning in blended roles.

10) Conduct care delivery practice analyses for all care settings.

11) Define practice-specific competencies for the IP in each care setting.

12) Leverage key partnerships to identify needed adaptations to IPC practices within each care setting and promote consistent implementation.

13) Develop a model to help conduct practice-specific risk assessments (eg, dialysis) and apply results to support organizational IPC resource allocation.

14) Conduct a gap analysis, inclusive of key stakeholders, of current data and evidence across the continuum of care that demonstrates the value of IPs and identify where additional data and evidence are needed.

15) Work with key stakeholders to identify and promote sharing of data that will impact prevention of healthcare−associated infections for nonacute care settings (eg, long-term care).

16) Create a plan to leverage telehealth technology to expand IP reach across the continuum of care.

17) Assist IPs to conceptualize and explore revenue generating opportunities across all care settings.

APIC should:
18) Broaden its program of distinction to recognize other care settings and industries that demonstrate compliance with infection prevention standards (eg, ambulatory care, farms, airlines, restaurants, daycare centers).

19) Create market demand for infection-free environments.

20) Partner with patient advocates to create the case for change and advance the value of IPC practices.

21) Include as a strategic priority the leadership development, effectiveness, and advancement of IPs.

22) Develop a framework that facilitates the IP's ability to calculate and communicate the value proposition related to IPC programs across diverse care settings.

IPs should:
23) Assess the economic return on investment of the IPC program at least annually.

24) Include financial measures as part of their ongoing program metrics.

IPC field should:
25) Transform and expand IP certification and recertification processes to include leadership competencies and experiences.

26) Establish and provide specific experiential opportunities for leadership training (eg, internships, mentoring).

27) Incorporate human factors engineering into the technical training of IPs.

28) Expand the IP role to include direct patient engagement.

CONCLUSION: CONFERENCE WRAP-UP AND NEXT STEPS

To close the conference, APIC invited 2 conferees and a Board member to reflect on the process and experience of coming together to develop consensus recommendations. One conferee said she is excited about the future implications of the recommendations as IPs begin to broaden their scope and "extend our reach beyond hospitals and traditional healthcare industry settings to places like daycare centers, restaurants, farms and other agricultural businesses, and more." Another conferee said he was impressed by the fact that APIC "chose to engage the wider healthcare community in thinking about and developing recommendations around the future role of

IPs." He called on all conferees to "stay engaged and carry the water for these important recommendations." Finally, an APIC Board member thanked the conferees for their "passionate engagement" during the conference.

The recommendations will now go to APIC's Board of Directors for review and prioritization. Since the early planning stages of the conference, the Board has expressed genuine commitment to doing as much as it can with the recommendations going forward. It will begin by broadly disseminating and publicizing the recommendations to IPs and the IPC field as well as to the broader healthcare community.

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The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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